

## REMARKS

The present application has been reviewed in light of the Office Action dated June 13, 2008. Claims 1 and 4 are presented for examination, of which Claim 1 is in independent form. Claims 2, 3, and 5-7 have been withdrawn from consideration until Claim 1 is determined to be allowable. Claims 8-12 have been canceled as being directed to a non-elected invention. Claim 1 has been amended to define aspects of Applicant's invention more clearly. Favorable reconsideration is requested.

The Office Action states that Claim 1 is rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,689,339 (Ota et al.); and that Claim 4 is rejected under § 103(a) as being unpatentable over Ota et al. in view of U.S. Patent No. 4,652,109 (Tsunekawa). For at least the reasons presented herein, Applicant submits that Claims 1 and 4 are patentably distinct from the cited references.

Claim 1 is directed to an image pickup apparatus that includes a plurality of pixels and an output unit. Included in each of the plurality of pixels are a first sensitive area and a second sensitive area. The first and second sensitive areas receive light flux respectively corresponding to different areas of an exit pupil of an imaging optical system. In each of the plurality of pixels two photoelectric conversion portions are formed, based on the first and second sensitive areas. A sensitivity distribution of the first sensitive area and a sensitivity distribution of the second sensitive area partially overlap. The output unit receives a first electric signal and a second electric signal from each of the plurality of pixels, and detects and outputs a phase difference between corresponding first and second electric signals from each of the plurality of pixels. The first sensitive and second sensitive areas of each of the plurality of pixels

are arranged so that corresponding first and second electric signals, received by the output unit, each includes signals generated in the first and second sensitive areas of a corresponding one of the plurality of pixels.

A notable feature of Claim 1 is that, for each pixel, a sensitivity distribution of the first sensitive area and a sensitivity distribution of the second sensitive area partially overlap. (See, for example, Fig. 28 and the description thereof in the specification.) This feature eliminates the gap typically present in the sensitivity distributions of devices in which, for example, an  $n^+$ -type FD region (131 in Fig. 39) is positioned between buried photodiodes formed in  $n$ -type layers (129 and 130 in Fig. 39). (See, for example, Figs. 39 and 40 and the descriptions thereof in the specification.)<sup>1</sup>

Another notable feature of Claim 1 is that the output unit receives a first electric signal and a second electric signal from each of the plurality of pixels, and detects and outputs a phase difference between corresponding first and second electric signals from each of the plurality of pixels.

Ota et al. relates to an alignment apparatus that enables a mask, which is used to produce a pattern on a photosensitive substrate, to align with a photosensitive substrate.

The Office Action asserts that reference numeral 214 of Ota et al. discloses the claimed output unit. Applicant respectfully disagrees. Reference numeral 214 of Ota et al. refers to a signal processing system that “detects a phase difference on a waveform between the photoelectric signal from, e.g., the light-receiving surface 382a and the photoelectric signal S1

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<sup>1</sup>It is to be understood that any examples presented herein are intended to be illustrative and are not to be construed to limit the scope of the claims.

from the light-receiving element 354.” (See column 28, lines 6-9.) As shown in Fig. 20 of Ota et al., for example, the light-receiving surface 382a and the light-receiving surface 354 are not first and second sensitive areas of a pixel, nor are they suggestive of first and second sensitive areas of a pixel. Thus, the signal processing system 214 of Ota et al. does not receive first and second electric signals from first and second sensitive areas of each of a plurality of pixels, nor does the system 214 detect and output a phase difference between corresponding first and second electric signals from each of the plurality of pixels, as claimed in Claim 1.

Further, it is respectfully submitted that Ota et al. is completely silent regarding the subject of first and second sensitive areas receiving light flux respectively corresponding to different areas of an exit pupil of an imaging optical system, wherein two photoelectric conversion portions are formed in each pixel based on the first and second sensitive areas, and wherein a sensitivity distribution of the first sensitive area and a sensitivity distribution of the second sensitive area partially overlap, as claimed in Claim 1.

In summary, nothing has been found in Ota et al. that is believed to teach or suggest an image pickup apparatus that includes “a plurality of pixels each including a first sensitive area and a second sensitive area, wherein the first and second sensitive areas receive light flux respectively corresponding to different areas of an exit pupil of an imaging optical system, wherein two photoelectric conversion portions are formed in each of the plurality of pixels based on the first and second sensitive areas, and wherein a sensitivity distribution of the first sensitive area and a sensitivity distribution of the second sensitive area partially overlap,” and “an output unit that receives a first electric signal and a second electric signal from each of the plurality of pixels and that detects and outputs a phase difference between corresponding first

and second electric signals from each of the plurality of pixels,” wherein “the first sensitive and second sensitive areas of each of the plurality of pixels are arranged so that corresponding first and second electric signals, received by the output unit, each includes signals generated in the first and second sensitive areas of a corresponding one of the plurality of pixels,” as recited in Claim 1. Accordingly, Applicant submit that Claim 1 is not anticipated by Ota et al. and therefore respectfully requests withdrawal of the rejection under 35 U.S.C. § 102(b).

Claim 4 depends from Claim 1 and is submitted to be patentable for at least the reasons discussed above. However, because each dependent claim also is deemed to define an additional aspect of the invention, individual reconsideration of the patentability of Claim 4 on its own merits is respectfully requested.

Tsunekawa is directed to a system for measuring camera light, and is cited in the Office Action for disclosing the use of an F-number in forming “BM1” and BN1” areas. Applicant submits that BM1 refers to a central region of a *picture frame* of a picture to be taken by the camera, and BN1 refers to an entire area of the *picture frame*. (See, for example, Fig. 2 and column 2, lines 54-57.) It is therefore respectfully submitted that BM1 and BN1 do not disclose or suggest first and second sensitive areas of a *pixel*. Moreover, it is respectfully submitted that the deficiencies of Ota et al. described above are not remedied by the disclosure of Tsunekawa.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

No petition to extend the time for response to the Office Action is deemed necessary for this Amendment. If, however, such a petition is required to make this Amendment

timely filed, then this paper should be considered such a petition and the Commissioner is authorized to charge the requisite petition fee to Deposit Account 50-3939.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

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